

SHOE SOLE HAVING A NON-FLAT SURFACE FOR ACCOMMODATING THE  
NON-FLAT UNDERSURFACE OF A FOOT RESTING ON THE SOLE

BACKGROUND OF THE INVENTION

Field of the Invention:

5           This application relates generally to a sole of a shoe and more particularly to a sole of a shoe that has a non-flat surface for accommodating the non-flat undersurface of a human foot that rests on the sole of the shoe when the shoe is worn.

Description of the Prior Art:

10           Generally, a conventional sole of a shoe has a flat surface although the undersurface of a foot that wears the shoe and that rests on the sole of the shoe is not flat.

          In particular, a pair of bones known as the sesamoid bones in the anatomy of a human foot protrudes underneath the main toe of a foot. An example of the pair  
15 of sesamoid bones is shown in FIG. 5 as a pair of the semamoid bones 4 protrudes underneath the main toe 5.

          As shown in FIG. 5, this pair of the sesamoid bones 4 is a part of the non-flat undersurface structure of a foot. In particular, when the non-flat

undersurface of a foot rests on the flat conventional sole 3 of a shoe 1, 6, the protruding sesamoid bones 4 cause discomforts to the person wearing the shoe 1, 6.

As the protruding sesamoid bones 4 rub against the flat sole 3 of the shoe 1, 6, this causes the foot to become tired easily and may cause pain. Further, the protruding sesamoid bones 4 may cause the foot wearing the conventional flat-sole shoe 1, 3, 6 to lean and bend to either left or right side of the human body depending on the foot as the person wearing the shoe 1, 3, 6 moves by taking the steps for walking or running.

Accordingly, there is a need for providing a sole of a shoe that solves the problems associated with the conventional shoe 1, 6 having a flat-sole 3.

## SUMMARY OF THE INVENTION

Against this backdrop, embodiment(s) of the present invention have been developed.

A sole of a shoe has a depressed or recessed portion to receive a pair of sesamoid bones protruding the undersurface of a foot wearing the shoe. The shoe sole may be an attached part of the shoe or a piece separable from the shoe. The depth of the depressed portion is about 2 mm. A sole of a shoe may have an aperture, instead of a recessed portion, to receive a pair of

sesamoid bones.

These and various other features as well as advantages which characterize the present invention will be apparent from a reading of the following detailed description and a review of the associated drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top view showing the upper half of a sole of a shoe according to an embodiment of the present invention.

FIG. 2 is a cross-sectional view showing the cross-section along the line AA of the upper half of a sole of a shoe of FIG. 1.

FIG. 3 is a cross-sectional view showing the cross-section along the line BB of the upper half of a sole of a shoe of FIG. 1.

FIG. 4 is a cross-sectional view showing a cross-section of a sole of a shoe along with a cross-section of a foot wearing the shoe according to an embodiment of the present invention.

FIG. 5 is a cross-sectional view showing a cross-section of a conventional sole of a shoe along with a cross-section of a foot wearing the conventional shoe having the flat-surface sole.

## DETAILED DESCRIPTION

FIG. 1 is a top view showing the upper half of a sole 1 of a shoe according to an embodiment of the present invention. As shown in FIG. 1, a recessed or depressed portion 2 of the sole 1 has a depression to  
5 accommodate the protruding pair of sesamoid bones 4 (FIG. 4).

FIG. 2 shows the depression depth of the recessed or depressed portion 2 shown along the line AA of the sole 1 of FIG. 1. Generally, the depth of the recessed or depressed portion 2 is about 2 mm; however, other depths are possible depending on the structure of the sesamoid bones so that the  
10 depressed portion 2 can be tailored for the comfort of an individual wearing the shoe.

Further, it is noted that the recessed portion 2 can be formed by simply creating a hole or an aperture through the sole 1 to receive the protruding pair of sesamoid bones 4 and thereby to provide comfort.

15 FIG. 3 shows the depression depth of the depressed portion 2 shown along the line BB of the upper half of a sole 1 of a shoe of FIG. 1.

FIG. 4 is a cross-sectional view showing a cross-section of a sole of a shoe along with a cross-section of a foot wearing the shoe according to an

embodiment of the present invention. As shown in FIG. 4, the protruding  
sesamoid bones 4 of the main toe 5 is received in the depressed portion 2 of  
the sole 3 so that the comfort is provided to the person wearing the shoe and  
the problems caused by wearing the flat sole shoe (as shown in FIG. 5) are  
5 solved.

The sole 3 of a shoe 1, 6 or the shoe 1, 6 itself including the sole 3 is  
typically made from a synthetic material. The sole 3 including the recessed  
portion 2 is often made by a molding process. Nevertheless, it is noted that the  
sole 3 of a shoe 1, 6 according to an embodiment of the present invention can be  
10 made from various materials, whether they are synthetic or natural, and by  
various manufacturing processes including the molding process. Further, it is  
noted that the sole 3 of a shoe 1, 6 according to an embodiment of the present  
invention may be a separate piece, for example, an insert or a shoe liner,  
separable from the shoe 1, 6 or an attached part of the shoe 1, 3, 6.

15 It will be clear that the present invention is well adapted to attain the ends  
and advantages mentioned as well as those inherent therein. While a various  
embodiments including the presently preferred one has been described for  
purposes of this disclosure, various changes and modifications may be made,  
which are well within the scope of the present invention. Numerous other  
20 changes may be made which will readily suggest themselves to those skilled in

the art and which are encompassed in the spirit of the invention disclosed and as defined in the appended claims.